

## CHAPTER 2 TABLE OF CONTENTS

<b>Chapter 2 Table of Contents.....</b>	<b>2-i</b>
<b>Chapter 2 List of Tables.....</b>	<b>2-ii</b>
<b>2.0 Summary of the Alternatives.....</b>	<b>2-1</b>
2.1 Description of Alternative Suites.....	2-2
2.1.1 Alternative Suite 1: Maintaining the Existing Atlantic Commercial and Recreational Shark Fisheries (Status Quo) .....	2-3
2.1.2 Alternative Suite 2: Shark Fishery for Directed, HMS Angling, and HMS Charter/Headboat Permit Holders Only .....	2-4
2.1.3 Alternative Suite 3: Shark Fishery for Directed, Incidental, HMS Angling, and HMS Charter/Headboat Permit Holders .....	2-6
2.1.4 <i>Alternative Suite 4: Establish a Research Fishery for Sandbar Sharks; Shark Fishery for Directed, Incidental, HMS Angling, and HMS Charter/Headboat Permit Holders – Preferred Alternative</i> .....	2-8
2.1.5 Alternative Suite 5: Close Atlantic Shark Fisheries .....	2-10
2.2 Other Alternatives Analyzed.....	2-11
2.2.1 Stock Assessment Frequency.....	2-11
2.2.2 SAFE Report Timing .....	2-12
2.3 Alternatives Considered But Not Further Analyzed.....	2-13
2.3.1 Shark Fishery for Directed, Incidental, HMS Angling, and HMS Charter/Headboat Permit Holders Only (No BLL Gear).....	2-13

## **CHAPTER 2 LIST OF TABLES**

Table 2.1	Overview of alternatives suites.....	2-15
-----------	--------------------------------------	------

## **2.0 SUMMARY OF THE ALTERNATIVES**

As described in Chapter 1, based on the stock assessments for large coastal sharks (LCS), sandbar, blacktip, dusky, and porbeagle sharks that were finalized in 2006, NMFS is considering various shark management measures to meet the objectives of the Magnuson-Stevens Fishery Conservation and Management Reauthorization Act (Magnuson-Stevens Act) and the Consolidated Highly Migratory Species (HMS) Fishery Management Plan (FMP). NMFS conducted scoping, including seven public hearings (January 5, 2007, 72 FR 123), from November 2006 through January 2007. NMFS received a number of comments in regard to the assessments themselves and potential management measures. Based in part on these comments, NMFS produced a Pre-Draft of Amendment 2 to the Consolidated HMS FMP (pre-draft), which was presented to the HMS Advisory Panel (AP) in early March 2007, and asked for written comments on the Pre-Draft of Amendment 2 to the Consolidated HMS FMP by the end of March. Summaries of the March 2007 AP meeting and copies of the written comments received are available from the HMS Management Division.

Based in part on comments received during scoping and on the Pre-Draft of Amendment 2 to the Consolidated HMS FMP, NMFS has grouped the potential management measures into seven key topics. These seven key topics are:

- 1) Quotas/Species Complexes;
- 2) Commercial retention limits;
- 3) Time/Area closures;
- 4) Reporting requirements;
- 5) Seasons;
- 6) Regions; and
- 7) Recreational measures.

Traditionally, for the Atlantic shark fishery, NMFS has analyzed alternatives under each of these topics separately. For example, under quotas/species complexes, NMFS could analyze a range of quota alternatives from no fishing (or a quota of zero, with all species prohibited) to status quo (a quota of 1,017 mt dw with 19 prohibited species).

Under the approach of analyzing each topic separately, analysis can quickly become difficult and complex given the interrelatedness of the alternatives. Under this approach, choosing one alternative in one topic can have very different impacts on the alternatives under other topics. For example, under no fishing, there would be no need to establish retention limits and no need to analyze the different alternatives. However, if the quota remains at status quo, the range of retention limits alternatives that could be analyzed would change dramatically. Thus, under this approach, NMFS could be analyzing a variety of alternatives, many of which would not be viable under the objectives of the rulemaking or would not make sense when considering the alternatives under different topics.

Furthermore, analyzing these different alternatives separately may confuse the public as it may not be obvious what the ramifications of selecting different alternatives under different

topics may be on the shark stocks and participants in the shark fishery. The public may prefer alternatives under different topics that cannot be implemented together (*e.g.*, together they would not meet the rebuilding plan for sandbar sharks). Additionally, listing and analyzing the topics separately may not reinforce why NMFS chose particular preferred alternatives across the different topics. Given the specific objectives of this rulemaking (including rebuilding several shark stocks and ending overfishing), only certain combinations of alternatives under the different topics will meet the management goals.

To address these concerns, NMFS explored different methods of addressing these issues in EISs completed by other Federal agencies and has decided to analyze a number of alternative “suites” that pull from a range of alternatives under all the topics. For example, the status quo alternative includes the status quo measures currently in place under all the seven key topics (*i.e.*, quotas, species complexes, retention limits, reporting, seasons, regions, and recreational measures). The analysis of this alternative suite would assess the impact of the status quo measures as a whole. Similarly, all the other alternative suites assess the impacts of the changes to each key topic being proposed within each alternative suite.

NMFS intends for this method:

- To capture the entire range of potential environmental and socioeconomic impacts and better describe the relationship between the different alternatives;
- To provide a clearer representation of the impacts of the alternatives and why an alternative suite is preferred;
- To reduce the number of permutations or combinations of alternatives that may be combined, and which could be at odds with one another;
- To provide fishermen with a better understanding of how a particular alternative suite would affect them based on the permit(s) they possess;
- To elucidate the viable combination of management measures that will rebuild several shark stocks and end overfishing; and,
- To clarify the approach being used to reach the management goals outlined in this rulemaking (*i.e.*, outline how the total allowable catch for sandbar sharks is being attained while allowing retention of other shark species).

The alternative suites are described below and in Table 2.1. The ecological and socio-economic impacts of each alternative suite, as a whole, are analyzed in Chapter 4 and other chapters.

## **2.1 Description of Alternative Suites**

The proposed action would include a combination of several preferred alternatives (suites). One alternative suite would need to be selected from alternative suites 1-5. In addition, one alternative would also need to be selected regarding the timing of stock assessments (either alternative 6 or 7) and SAFE reports (alternative 8 or 9). Currently, the preferred alternatives include: alternative suite 4, alternative 7, and alternative 9.

### **2.1.1 Alternative Suite 1: Maintaining the Existing Atlantic Commercial and Recreational Shark Fisheries (Status Quo)**

The status quo alternative suite would maintain the existing commercial and recreational management measures for the Atlantic LCS, Small Coastal Sharks (SCS), and pelagic shark fisheries. The seventy-two species of Atlantic sharks managed by NMFS are divided into four species groups for management: LCS, SCS, pelagic sharks, and prohibited sharks. The LCS complex is comprised of 11 species including sandbar, silky, tiger, blacktip, spinner, bull, lemon, nurse, scalloped hammerhead, great hammerhead, and smooth hammerhead sharks. SCS consist of finetooth, Atlantic sharpnose, blacknose, and bonnethead sharks. Pelagic sharks consist of blue, oceanic whitetip, porbeagle, shortfin mako, and thresher sharks. Prohibited sharks consist of sand tiger, bigeye sand tiger, whale, basking, white, dusky, bignose, Galapagos, night, Caribbean reef, smalltail, Caribbean sharpnose, narrowtooth, Atlantic angel, longfin mako, bigeye thresher, sevengill, sixgill, and bigeye sixgill sharks. The remaining 33 species are included for data collection purposes only.

Specific management measures currently in place include:

#### *Commercial Management Measures*

##### Quotas/Species Complexes:

- LCS Complex (11 species, includes sandbar sharks) = 1,017 mt dw; SCS complex = 454 mt dw; Blue Sharks = 273 mt dw; Pelagic Sharks (Other than Blue and Porbeagle Sharks) = 488 mt dw; Porbeagle Sharks = 92 mt dw; and Display and Scientific Research = 60 mt ww;
- Overharvests and underharvests are deducted from/added to the next years corresponding regional trimester quota;

##### Retention Limits:

- LCS: 4,000 lb dw for directed permit holders and 5 LCS for incidental permit holders;
- SCS: No retention limit for directed permit holders and 16 SCS and pelagic sharks combined for incidental permit holders;
- Pelagic Sharks: No retention limit for directed permit holders and 16 SCS and pelagic sharks combined for incidental permit holders;
- Fishermen may land sharks with fins removed except for the anal and 2<sup>nd</sup> dorsal fins. The total quantity of fins may not exceed 5 percent of the total dressed carcass weight of sharks on board;

##### Time/Area Closures:

- Mid-Atlantic Shark Closed Area and Caribbean Sustainable Fisheries Act (SFA) closures are seasonal bottom longline (BLL) closures; the Atlantic Large Whale Take Reduction Team has implemented a suite of gear restrictions, observer requirements, etc. to reduce the likelihood of interactions between shark gillnet gear and endangered north Atlantic

right whales during the winter calving period. Several pelagic longline (PLL) time/area closures apply if shark permit holders are using this gear;

Reporting:

- Dealer reports must be *postmarked* by the dealer within 10 days of the 1<sup>st</sup> and 15<sup>th</sup> of every month;
- Logbooks (Coastal Fisheries or HMS Logbook) must be submitted by fishermen within 7 days of offloading any sharks;
- Mandatory vessel observer coverage if selected;

Seasons:

- Three trimesters (January – April; May – August; and, September – December) for LCS, SCS, and Pelagic sharks;
- Seasons are established based on quota availability, catch rates, and public comment. LCS opening and closing dates are announced before season opening. Pelagic and SCS sharks closed, as needed, with 14-day notice;

Regions:

- Three regions (Gulf of Mexico, South Atlantic, and North Atlantic) for SCS and LCS; no regions for pelagic sharks;

*Recreational Management Measures:*

- Authorized species include bonnethead, bull, nurse, tiger, lemon, hammerheads, sandbar, Atlantic sharpnose, porbeagle, finetooth, smooth hammerhead, great hammerhead, smooth hammerhead, blacknose, shortfin mako, common thresher, oceanic whitetip, blue, spinner, and silky sharks;
- Possession limit: 1 shark > 54” per vessel per trip, also 1 sharpnose and 1 bonnethead per person per trip with no minimum size requirements;

**2.1.2 Alternative Suite 2: Shark Fishery for Directed, HMS Angling, and HMS Charter/Headboat Permit Holders Only**

Alternative suite 2 would allow only directed shark permit holders to commercially harvest sharks, but would prohibit retention of sandbar sharks on pelagic longline (PLL) gear. Incidental permit holders would not be allowed to retain any shark species. Based on their overfished status, porbeagle sharks would be placed on the prohibited list in alternative suites 2 through 5, resulting in no retention of porbeagle sharks by commercial or recreational fishermen. Species complexes, commercial quotas, and commercial retention limits for alternative suites 2-4 are described in Appendix A. Recreational bag limits would stay the same as the status quo for alternative suites 2 through 5; however, only the species listed in Table 2.1 would be allowed to be retained by recreational fishermen (*i.e.*, those that possess a HMS Angling, HMS Charter/Headboat, or Atlantic tunas General Category permit if participating in a registered HMS tournament). This list of authorized species is based on species of shark that recreational

fishermen could easily identify to reduce fishing pressure as a result of mis-identification on dusky, sandbar, and porbeagle sharks.

Dusky sharks would not be authorized for collection for public display under alternative suites 2 through 5. However, based on research needs and objectives, NMFS would review the allocation of dusky sharks for research on a case by case basis. NMFS would allocate 1 mt dw (1.39 mt ww) of the current 60 mt ww (43.2 mt dw) display and research set-aside to sandbar sharks for public display. An additional 1 mt dw (1.39 mt ww) of the sandbar sharks would be allocated specifically for research conducted by industry vessels (however, this would be separate from any sandbar quota used in the research fishery in alternative suite 4). The remaining research and display set-aside (41.2 mt dw or 57.2 mt ww) would be authorized for all other shark species, excluding dusky and sandbar sharks, under the exempted fishing program. These new allocations would apply to alternative suites 2 through 5.

Specific management measures analyzed in this alternative suite include:

#### Commercial Management Measures

##### Quotas/Species Complexes:

- Sandbar = 116.6 mt dw; non-sandbar LCS = 541.2 mt dw; SCS = 454 mt dw; Blue Sharks = 273 mt dw; Pelagic Sharks (Other than Blue Sharks) = 488 mt dw; Porbeagle Sharks = Prohibited (0 mt dw quota); and Display and Scientific Research = 60 mt ww (Sandbar = 2.8 mt ww (2 mt dw); all other shark species (except dusky sharks) = 57.2 mt ww (41.2 mt dw);
- Overharvests would be removed from the next season's quota. Underharvests for species that are not unknown, overfished, or experiencing overfishing would be transferred to the next season's quota, up to 50 percent of the base quota. For species/complexes that are overfished, experiencing overfishing, or unknown; underharvests would not be transferred to the next season's quota;

##### Time/Area Closures:

- Maintain existing mid-Atlantic shark closed area closure; close the eight marine protected areas (MPAs) in the South Atlantic Fishery Management Council's (SAFMC) Amendment 14;

##### Retention Limits:

- 8 sandbar/vessel/trip and 21 non-sandbar LCS/vessel/trip for directed permit holders only; no trip limit for SCS and pelagic sharks for directed permit holders;
- No retention of any sharks by incidental permit holders;
- No sandbar sharks retained with PLL onboard;
- Retention of porbeagle sharks would be prohibited in all fisheries;
- All sharks landed with fins attached;

### Reporting:

- Dealer reports must be received by NMFS within 24 hours of sale of shark;
- All unclassified sharks reported would be categorized as sandbar sharks;
- Vessels subject to mandatory observer coverage if selected;
- Requirements for vessel logbook submission would remain the same;

### Seasons:

- One commercial season opening on January 1 of each year;
- Close seasons for sandbar and non-sandbar LCS when landings of either reach 80% of the available quota with a five day notice;
- SCS and pelagic sharks would continue to be retained until SCS and pelagic shark landings reach 80% of their respective quotas;

### Regions:

- One region for all managed shark species;

### *Recreational Management Measures:*

- Authorized species include bonnethead, nurse, tiger, lemon, hammerheads, sharpnose, shortfin mako, common thresher, oceanic whitetip, blue, and spinner sharks. Possession limit: 1 shark > 54" FL per vessel per trip, also 1 sharpnose and 1 bonnethead per person per trip with no minimum size requirements.

#### **2.1.3 Alternative Suite 3: Shark Fishery for Directed, Incidental, HMS Angling, and HMS Charter/Headboat Permit Holders**

Alternative suite 3 would implement a host of management measures resulting in a reduced shark fishery for sandbar sharks and non-sandbar LCS by incidental and directed shark permit holders. Incidental and directed shark permit holders would also be allowed to land SCS and pelagic sharks (except porbeagle sharks). Recreational fishermen (*i.e.*, those that possess a HMS Angling, HMS Charter/Headboat, or Atlantic tunas General Category permit if participating in a registered HMS tournament) would be allowed to retain species of sharks that are easy to identify (see Table 2.1). Unlike alternative suite 2, this alternative would allow incidental shark permit holders to retain some sharks. Species complexes, commercial quotas, and commercial retention limits for this alternative suite are described in Appendix A.

Specific management measures implemented via this alternative would include:

### *Commercial Management Measures*

#### Quotas/Species Complexes:

- Sandbar = 116.6 mt dw; non-sandbar LCS = 541.2 mt dw; SCS = 454 mt dw; Blue Sharks = 273 mt dw; Pelagic Sharks (Other than Blue Sharks) = 488 mt dw; Porbeagle Sharks = Prohibited (0 mt dw quota); and Display and Scientific Research = 60 mt ww



(Sandbar = 2.8 mt ww (2 mt dw); all other shark species (except dusky sharks) = 57.2 mt ww (41.2 mt dw);

- Overharvests would be removed from the next season's quota. Underharvests for species that are not unknown, overfished, or experiencing overfishing would be transferred to the next season's quota, up to 50 percent of the base quota. For species/complexes that are overfished, unknown, or experiencing overfishing, underharvests would not be transferred to the next season's quota;

#### Time Area Closures:

- Maintain existing time area closures and close the eight time/area closures recommended by the SAFMC in their Amendment 14;

#### Retention Limits:

- 4 sandbar/vessel/trip and 10 non-sandbar LCS/vessel/trip for directed and incidental permit holders;
- No retention limit for SCS and pelagic sharks for directed permit holders;
- 16 SCS and pelagic sharks combined for incidental permit holders;
- Retention of porbeagle sharks would be prohibited in all fisheries;
- All sharks must be landed with fins attached;
- All gears allowed (no restrictions for PLL);

#### Reporting:

- Dealer reports must be *received* by NMFS not later than 10 days after each reporting period (*i.e.*, 25<sup>th</sup> and 10<sup>th</sup> of each month); logbook and observer requirements would be maintained;
- All unclassified sharks reported would be categorized as sandbar sharks;

#### Seasons:

- One commercial season opening on January 1 of each year;
- Close seasons for sandbar and non-sandbar LCS when landings of either reach 80% of the available quota with a five day notice;
- SCS and pelagic sharks could continue to be retained until SCS and pelagic shark landings reach 80% of their respective quotas;

#### Regions:

- One region for all managed shark species;

#### *Recreational Management Measures:*

- Authorized species include: bonnethead, nurse, tiger, lemon, hammerheads, sharpnose, shortfin mako, common thresher, oceanic whitetip, blue, spinner, and silky sharks.

Possession limit: 1 >54" FL shark per vessel per trip, also 1 Atlantic sharpnose and 1 bonnethead per person with no minimum size.

***2.1.4 Alternative Suite 4: Establish a Research Fishery for Sandbar Sharks; Shark Fishery for Directed, Incidental, HMS Angling, and HMS Charter/Headboat Permit Holders – Preferred Alternative***

Alternative suite 4 would establish a small research fishery that would harvest the entire 116.6 mt dw sandbar quota. Vessels inside the research fishery could also retain non-sandbar LCS, SCS, and pelagic sharks (except porbeagle sharks). Vessels with commercial shark permits outside of the research fishery could only retain non-sandbar LCS as well as SCS and pelagic sharks (except porbeagle sharks) (see Table 2.1). Participation in this research fishery would be subject to vessels meeting specific criteria designed to meet research objectives while allowing fishermen to earn revenue from selling sandbar sharks. These criteria may include, but are not limited to: possession of a commercial shark permit, seasonal flexibility with regard to trips targeting sandbar sharks, willingness and ability to take an observer on 100 percent of fishing trips and collect biological samples from landed and released sharks, and ability to participate in the program for at least one year. Vessels not participating in the research program would still be authorized to land non-sandbar LCS, SCS, and pelagic sharks subject to the retention limits described below. Species complexes, commercial quotas, and commercial retention limits for this alternative suite are described in Appendix A. Only vessels participating in the research fishery could land sandbar sharks.

The Agency is proposing incorporation of the shark research fishery into the existing program for issuance of Exempted Fishing Permits, Display Permits, Scientific Research Permits, and Letters of Acknowledgement. Commercial shark permit holders (directed and incidental) would be invited to submit an application to participate in the shark research fishery on an annual basis. Applications would be evaluated to ensure that selected vessels are willing to take an observer and participate in data collection efforts on all trips under the purview of this permit, vessels are flexible with regard to timing of fishing excursions to ensure that samples are collected throughout the year, vessels are selected from all regions to ensure that samples are collected throughout the U.S. Atlantic, and that selected vessels have not had any significant fisheries violations in the past. The Agency is interested in collecting biological samples from sandbar and non-sandbar LCS throughout the year, therefore, the Agency would determine when the research vessels would fish to ensure adequate spatial and temporal sampling throughout the year. At this time, the Agency is not certain regarding the number of vessels that may participate in the shark research fishery. Data collected from the shark research fishery would assist fisheries scientists and managers maintain catch series data from the commercial shark fishery that are critical for future stock assessments. Shark life history data, including age at first maturity for sandbar sharks could also be improved as a result of this research fishery. Furthermore, research assessing methods to reduce interactions with dusky sharks, protected resources, or other bycatch may be investigated on vessels participating in this program.

Specific management measures implemented via this alternative would include:

## *Commercial Management Measures*

### Quotas/Species Complexes:

- Sandbar = 116.6 mt dw; non-sandbar LCS = 514.2 mt dw; SCS = 454 mt dw; Blue Sharks = 273 mt dw; Pelagic Sharks (Other than Blue Sharks) = 488 mt dw; Porbeagle Sharks = Prohibited (0 mt dw quota); and Display and Scientific Research = 60 mt ww (Sandbar = 2.8 mt ww (2 mt dw); all other shark species (except dusky sharks) = 57.2 mt ww (41.2 mt dw);
- Overharvests would be removed from the next season's quota. Underharvests for species that are not unknown, overfished, or experiencing overfishing would be transferred to the next season's quota, up to 50 percent of the base quota. For species/complexes that are overfished, unknown, or experiencing overfishing; underharvests would not be transferred to the next season's quota;

### Time Area Closures:

- Maintain existing time area closures and close the eight time/area closures recommended by the SAFMC;

### Retention Limits:

- No sandbar sharks may be landed outside of research program;
- Trip limit for sandbar and non-sandbar LCS (combined) for vessels participating in research program would vary depending on research criteria and data needs;
- 22 non-sandbar LCS/vessel/trip for directed and incidental permit holders not participating in research program;
- No trip limit for SCS or pelagic sharks (except porbeagle sharks) for directed permit holders; 16 SCS and pelagic sharks (except porbeagle sharks) combined for incidental permit holders;
- Retention of porbeagle sharks would be prohibited in all fisheries;
- All sharks must be landed with fins attached for all vessels;

### Reporting:

- 100 percent observer coverage for vessels participating in sandbar shark research program;
- Dealer reports must be *received* by NMFS not later than 10 days after each reporting period (*i.e.*, 25<sup>th</sup> and 10<sup>th</sup> of each month);
- Other logbook and observer requirements would be maintained for vessels not participating in research program;
- All unclassified sharks reported would be categorized as sandbar sharks.

### Seasons:

- One commercial season opening on January 1 of each year;

- Close seasons for sandbar and non-sandbar LCS when landings of either reach 80% of the available quota with a five day notice;
- SCS and pelagic sharks could continue to be retained until SCS and pelagic shark landings reach 80% of their respective quotas;

#### Regions:

- One region for all managed shark species;

#### *Recreational Management Measures:*

- Authorized species include: bonnethead, nurse, tiger, lemon, hammerheads, sharpnose, shortfin mako, common thresher, oceanic whitetip, blue, spinner, and silky sharks. Possession limit: 1 >54" FL shark per vessel per trip, also 1 sharpnose and 1 bonnethead per person with no minimum size

### **2.1.5 Alternative Suite 5: Close Atlantic Shark Fisheries**

This alternative would close all Atlantic, Gulf of Mexico, and Caribbean shark fisheries for all fishermen until reopening is warranted based on new stock assessments. Since interactions with sharks would likely occur in other commercial fisheries (e.g., snapper grouper, tilefish, mackerel), this alternative suite would modify the process of selection for discard reporting in the Coastal Fisheries Logbook to ensure that data on shark interactions in other non-HMS fisheries would be available. Shark landings would be limited to research and the collection for public display via the HMS Exempted Fishing Program. Recreational fisheries would be catch and release only.

Specific management measures implemented via this alternative would include:

#### Quotas/Species Complexes:

- Sandbar = 0 mt dw; non-sandbar LCS = 0 mt dw; SCS = 0 mt dw; Blue Sharks = 0 mt dw; Pelagic Sharks (Other than Blue Sharks) = 0 mt dw; Porbeagle Sharks = Prohibited (0 mt dw quota); and Display and Scientific Research = 60 mt ww (Sandbar = 2.8 mt ww (2 mt dw); all other shark species (except dusky sharks) = 57.2 mt ww (41.2 mt dw);

#### Time/Area Closures:

- Time/Area closures for BLL gear for the commercial shark fishery would no longer be applicable since all retention of sharks would be prohibited;
- HMS time/area closures for other gear types and fisheries would still be in effect;

#### Retention Limits:

- No sharks of any species could be possessed in the Atlantic, Caribbean, and Gulf of Mexico;

### Reporting:

- Modify logbook dead discard reporting for the Coastal Fisheries Logbook to ensure that information on shark interactions would be available;
- Request Atlantic, Gulf of Mexico, and Caribbean Fishery Management Councils that manage fisheries using longline and/or gillnet gear to place observers on vessels to monitor shark bycatch;

### Seasons:

- No open seasons;

### Regions:

- No regions for sharks;

### Recreational Measures:

- Recreational fisheries for sharks would be catch and release only with no possession allowed.

## **2.2 Other Alternatives Analyzed**

NMFS is also considering alternatives that would modify the existing schedule for conducting shark stock assessments and clarifying when the annual Stock Assessment and Fishery Evaluation (SAFE) report should be released. These alternatives are not analyzed within alternative suites.

### **2.2.1 Stock Assessment Frequency**

#### **Alternative 6: Stock Assessments for Sharks Every 2-3 Years (Status Quo)**

Alternative 6 would maintain current requirements to conduct stock assessments every 2-3 years. The 1999 FMP established that stock assessments be conducted for each species or species group every two to three years. HMS stock assessments are crucial in order to define stock boundaries, monitor rebuilding plans, improve knowledge of stock dynamics, and incorporate additional data in a timely manner. Since 2000, there have been two stock assessments completed by NMFS for LCS (2002, 2005/2006), one assessment completed for SCS (May 2002), and one is in progress for SCS (2007). Other assessments have been completed by other entities, including: SCS (August 2002 by Mote Marine Laboratory), two assessments for pelagic sharks (2004 by ICCAT), and the porbeagle assessment completed by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). The Agency is aware of another stock assessment being conducted by the Standing Committee on Research and Statistics (SCRS) of ICCAT for shortfin mako and blue sharks in 2008.

*Alternative 7: Stock Assessments for Sharks At Least Every 5 years - Preferred Alternative*

Alternative 7 would change the current process outlined in the 1999 FMP by requiring stock assessments for sharks at least every five years versus every 2-3 years. Stock assessments could occur more frequently, however, they must be conducted at least every five years. Because of the time necessary to modify management measures consistent with stock assessments, it seems prudent to lengthen the amount of time between stock assessments to allow existing or forthcoming measures to attempt to achieve their stated objectives. In 2003, the Agency adopted the Southeast Data Assessment and Review (SEDAR) process for completing shark stock assessments at the request of industry, environmentalists, and academics. This process increases the time necessary to complete a stock assessment because it entails three week long workshops where data are reviewed, stock assessment models run, and results reviewed by an outside panel. Since this process can take up to a year to complete necessary assessments on a species complex, completing these assessments every 2-3 years is not practical. This alternative would not modify any stock assessments that are already scheduled; assessments conducted by other management entities, and would also not affect frequency of stock assessments conducted for other HMS species.

**2.2.2 SAFE Report Timing**

*Alternative 8: SAFE Report Published in January or February of Every Year (Status Quo)*

Alternative 8 would maintain the current process of publishing a SAFE report in January or February of each year. According to the 1999 FMP, each year in January or February, NMFS publishes one SAFE report for the Atlantic tunas, swordfish, billfish, and sharks. The SAFE report follows the guidelines specified in National Standard (NS) 2 and are used by NMFS to develop and evaluate regulatory adjustments under the framework procedure or the FMP amendment process. This information provides the basis for determining annual harvest levels from each stock, documenting significant trends or changes in the resource, the bycatch, and the fishery over time, and assessing the relative success of existing state and Federal fishery management programs.

*Alternative 9: SAFE Report Published in the Fall of Every Year – Preferred Alternative*

Alternative 9 would modify the existing regulations by requiring the publication of a SAFE report in the fall of each year. The annual SAFE report would still be used to develop and evaluate regulatory adjustments under the framework procedure or the FMP amendment process as it is currently under the status quo, but it would be released to the public by the fall of each year.

## 2.3 Alternatives Considered But Not Further Analyzed

### 2.3.1 Shark Fishery for Directed, Incidental, HMS Angling, and HMS Charter/Headboat Permit Holders Only (No BLL Gear)

This alternative would remove BLL gear from the HMS authorized gear list but would still allow a fishery for directed, incidental, HMS Angling, Atlantic tunas general category (if participating in a registered tournament), and HMS Charter/Headboat permit holders using other authorized gears, including: gillnet, handline, rod and reel, bandit gear, and PLL. Commercial shark permit holders would not be able to possess sharks with BLL gear on board. The alternative is being considered but not further analyzed at this time because BLL gear is the primary gear used to harvest sharks. As such, it makes sense that to reduce shark mortality of at least some species for the Agency to consider not allowing BLL gear in the shark fishery. However, this gear type is also deployed in other fisheries to target other non-HMS (snapper/grouper, reef fish, and tilefish). Selecting this alternative could result in excessive regulatory discards of sharks because vessels with commercial shark permits would have to discard all sharks landed incidentally in the pursuit of other non-HMS species when BLL gear is onboard. Further, the increased retention limits described in this alternative suite may encourage shark fishermen to increase effort significantly in the shark gillnet fishery which, depending on where this effort were concentrated, may increase bycatch and the likelihood of interactions with marine mammals.

Not allowing BLL gear in the shark fishery would have significant economic and social impacts on commercial shark permit holders primarily using BLL gear. While it is assumed that very few directed shark permit holders subsist entirely on revenues attained from the shark fishery, however, impacts would still be severe for those participants that did depend on any income from participating in the directed shark fishery at certain times of the year. Because of the extensive economic impacts to shark directed permit holders as a result of not allowing BLL gear in the shark fishery, it is assumed that directed permit holders would likely pursue one of the following options as a result of closing the Atlantic shark fishery: (1) transfer fishing effort to other fisheries for which they are already permitted (snapper grouper, king and Spanish mackerel, tilefish, lobster, dolphin/wahoo, etc), (2) acquire the necessary permits to participate in other fisheries (both open access and/or limited access fisheries), or (3) relinquish all permits and leave the fishing industry.

Specific management measures implemented via this alternative would include:

#### *Commercial Management Measures*

##### Quotas/Species Complexes:

- Sandbar = 116.6 mt dw; non-sandbar LCS = 514.2 mt dw; SCS = 454 mt dw; Blue Sharks = 273 mt dw; Pelagic Sharks (Other than Blue Sharks) = 488 mt dw; Porbeagle Sharks = Prohibited (0 mt dw quota); and Display and Scientific Research = 60 mt ww (Sandbar = 2.8 mt ww (2 mt dw); all other shark species (except dusky sharks) = 57.2 mt ww (41.2 mt dw);

- Overharvests would be removed from the next season's quota. Underharvests for species that are not unknown, overfished, or experiencing overfishing would be transferred to the next season's quota, up to 50 percent of the base quota. For other species/complexes, underharvests would not be transferred to the next season's quota;

#### Time Area Closures:

- Revise existing BLL closures to reflect the fact that BLL is no longer an authorized gear in HMS fisheries;

#### Retention Limits:

- 10 sandbar/vessel/trip and 48 non-sandbar LCS/vessel/trip for directed and incidental permit holders;
- No trip limit for SCS or pelagic sharks (except porbeagle sharks) for directed permit holders;
- 16 SCS and pelagic sharks (except porbeagle sharks) combined for incidental permit holders;
- Retention of porbeagle sharks would be prohibited in all fisheries; and,
- All sharks must be landed with all fins attached;

#### Reporting:

- Dealer reports must be received by NMFS within 14 days;
- Other logbook and observer requirements would be maintained; and,
- All unclassified sharks reported would be categorized as sandbar sharks;

#### Seasons:

- One commercial season opens for all sharks opening on January 1 of each year;
- Retention of sandbar, non-sandbar LCS, SCS, and pelagic sharks (except porbeagle sharks) would be prohibited within 5-days of achieving 80 percent of their respective quotas;

#### Regions:

- One region for all managed shark species;

#### *Recreational Management Measures:*

- Authorized species include: bonnethead, nurse, tiger, lemon, hammerheads, sharpnose, shortfin mako, common thresher, oceanic whitetip, blue, and spinner sharks. Possession limit: 1 >54" FL shark per vessel per trip, also 1 sharpnose and 1 bonnethead per person with no minimum size.



**Table 2.1 Overview of alternatives suites**

Alternative Suite	Quotas/Species Complexes	Time Area Closures	Retention Limits	Reporting	Seasons	Regions	Recreational Measures
1 – Status Quo	<ul style="list-style-type: none"> <li>- 1,017 dw LCS</li> <li>- 454 dw SCS</li> <li>- 488 dw Pelagic Sharks</li> <li>- 273 dw Blue Sharks</li> <li>- 92 mt dw Porbeagle Sharks</li> <li>- 19 Prohibited spp</li> <li>- 60 mt ww for EFPs</li> </ul>	Mid-Atlantic (BLL), Caribbean (BLL), Right Whale (GN), PLL closures;	<ul style="list-style-type: none"> <li>- 4,000 lb dw directed LCS; no trip limit for pel/SCS</li> <li>- 5 LCS and 16 pel/SCS for incidental</li> </ul>	- Observers, logbooks, dealer weigh-outs	Trimesters	3 regions	1 shark > 54” vessel/trip, plus 1 sharpnose and 1 bonnethead per person/trip (no minimum size)
2 – Limited Shark Fishery for Directed Permit Holders Only	<ul style="list-style-type: none"> <li>- 116.6 mt dw Sandbar Sharks</li> <li>- 541 mt dw non-sandbar LCS</li> <li>- SQ SCS</li> <li>- SQ Pelagic Sharks</li> <li>- SQ Blue Sharks</li> <li>- Add porbeagle sharks to Prohibited spp.</li> <li>- Sub-quota for Sandbar EFPs</li> <li>- No dusky sharks authorized for display</li> <li>- Remove overharvests from next year</li> <li>- Carryover 50 percent of base quota for spp. not overfished (<i>i.e.</i>, SCS)</li> <li>- No carryover for overfished, overfishing, or unknown spp (<i>e.g.</i>, LCS)</li> </ul>	<ul style="list-style-type: none"> <li>- Status Quo +</li> <li>- SAFMC’s closures</li> </ul>	<ul style="list-style-type: none"> <li>- 8 Sandbar sharks/vessel/trip</li> <li>- 22 non-sandbar LCS/vessel/trip (~1,032 lb/trip for sandbar and non-sandbar LCS)</li> <li>- SCS/Pelagics no trip limit</li> <li>- All sharks landed fins on</li> <li>- Directed permit holders only</li> <li>- No sandbar with PLL onboard</li> </ul>	<ul style="list-style-type: none"> <li>- Increase dealer reporting frequency to <i>received</i> within 24 hrs from time of sale (requires PRA revision)</li> <li>- Observers/Logbooks SQ</li> <li>- Unclass = sandbar not LCS</li> </ul>	<ul style="list-style-type: none"> <li>- Open Jan. 1</li> <li>- Close both non-sandbar LCS and Sandbar sharks when either @ 80%</li> <li>- Pelagic sharks and SCS close @ 80%</li> <li>- 5 days notice</li> </ul>	No Regions	<ul style="list-style-type: none"> <li>- SQ retention and size limit</li> <li>- Possession of: bonnethead, nurse, tiger, hammerheads, lemon, sharpnose, mako, spinner, thresher, oceanic whitetip, &amp; blue ONLY</li> </ul>

Alternative Suite	Quotas/Species Complexes	Time Area Closures	Retention Limits	Reporting	Seasons	Regions	Recreational Measures
3 – Limited Shark Fishery for Directed and Incidental Permit Holders (all gears)	Same as Alt 2	Same as Alt 2	<ul style="list-style-type: none"> <li>- 4 Sandbar/vessel/trip</li> <li>- 10 non-sandbar LCS/vessel/trip (~499 lb dw/trip for sandbar and non-sandbar LCS)</li> <li>- Directed and Incidental permit holders same trip limit for sandbar/non-sandbar LCS</li> <li>- SCS/Pelagic sharks no trip limit for directed permit</li> <li>- SCS/Pelagic sharks 16/trip (combined) for incidental permit</li> <li>- All sharks landed fins on</li> <li>- All gears allowed</li> </ul>	<ul style="list-style-type: none"> <li>- Dealer reports <i>received</i> within 14 days</li> <li>- Observers/Logbooks SQ</li> <li>- Unclassified = sandbar sharks; not LCS complex</li> </ul>	Same as Alt 2	Same as Alt 2	Same as Alt 2

Alternative Suite	Quotas/Species Complexes	Time Area Closures	Retention Limits	Reporting	Seasons	Regions	Recreational Measures
4 - Research set aside; allows for very small directed fishery for LCS	Same as Alt 2	Same as Alt 2	<ul style="list-style-type: none"> <li>- Sandbar retention only by vessels with shark research permit ONLY</li> <li>- Depends upon research objectives</li> <li>- 22 non-sandbar LCS/vessel/trip (491 mt dw left of non-sandbar LCS quota) for directed/incidental permit holders</li> <li>- SCS/Pelagic sharks no trip limit for directed permit</li> <li>- SCS/Pelagic sharks 16/trip for incidental permit</li> <li>- All sharks landed fins on</li> </ul>	<ul style="list-style-type: none"> <li>- 100% observer coverage on research vessels;</li> <li>- Observers/Logbooks SQ</li> <li>- Dealer reports <i>received</i> within 14 days</li> <li>- Unclassified = sandbar sharks; not LCS complex</li> </ul>	Same as Alt 2	Same as Alt 2	Same as Alt 2
5 – Close Atlantic Shark Fishery	All species prohibited	NA	None, all species prohibited	-Need to improve logbook discard reporting for Coastal Fisheries Logbook	NA	NA	No possession of any sharks, catch and release only

